

SERVICE MANUAL

CORDLESS TELEPHONE

This Service Manual is the "Revision Publishing" and replaces "Simple Manual" (S/M Code No. 09-99B-336-4T1).

This Service Manual does not include "ADJUSTMENT" These items will be issued in the next Supplement.

SPECIFICATIONS

OPERATING FREQUENCIES

	BASE	HANDSET
TRANSMIT FREQUENCY	31MHz	40MHz
RECEIVE FREQUENCY	40MHz	31MHz

GENERAL

Pulse Mode Dialing Rate	10 PPS
Pause Entry Delay	3 Seconds
R (flash)	100 ms
Redial Memory Capacity	32 Digits
Power Requirements	
BASE and CHARGER	230V 8/9V AC
HANDSET	3.6V DC (Nickel-Cadmium Battery)
Weight	
BASE	263 g (9.2 oz.)
HANDSET (Battery not included)	130 g (4.6 oz.)
Measurements	
BASE	150 (W) × 174 (D) × 51 (H) mm
(Antenna not included)	(6 × 6 ⁷ / ₈ × 2 ¹ / ₈ in.)
Antenna length	382 mm (15 ¹ / ₈ in.)
HANDSET	52 (W) × 162 (D) × 31.2 (H) mm
(Antenna not included)	(2 ¹ / ₈ × 6 ¹ / ₂ × 1 ¹ / ₄ in.)
Antenna length	101 mm (4 in.)
Battery Life (HANDSET)	Standby: 10 days Talk: 7 hours
Frequency	31/40 MHz
Modulation	FM
Security Code	65K Random

- Design and specifications are subject to change without notice.

ELECTRICAL MAIN PARTS LIST

DESCRIPTIONで判断できない物は "REFERENCE NAME LIST" を参照してください。
If can't understand for Description please kindly refer to "REFERENCE NAME LIST".

REF. NO	PART NO.	KANRI NO.	DESCRIPTION	REF. NO	PART NO.	KANRI NO.	DESCRIPTION
IC				C212	87-010-178-080		CHIP CAP 1000P
	88-PCD-605-010	IC, TB31224F		C213	87-010-196-080		CHIP CAPACITOR, 0.1-25
	88-PCD-602-010	IC, TMP87C807U		C214	87-010-196-080		CHIP CAPACITOR, 0.1-25
	87-A21-136-040	IC, AT24C01A-10SC 8P		C215	87-010-196-080		CHIP CAPACITOR, 0.1-25
	S9-570-290-000	IC, KIA7029F		C217	87-A10-891-080		CAP, E 4.7-25 SME
	8Z-PC6-603-010	IC, TMP87C408N		C218	87-010-197-080		CAP, CHIP 0.01 DM
	87-A91-033-010	P-COUPLER, LTV817		C219	87-010-196-080		CHIP CAPACITOR, 0.1-25
	8Z-PC6-605-010	IC, TEA1062		C220	87-010-197-080		CAP, CHIP 0.01 DM
				C221	87-010-198-080		CAP, CHIP 0.022
				C224	87-010-378-040		CAP, E 10-16
TRANSISTOR				C301	87-A11-713-080		C-CAP, S 0.039-50 Z F
	SA-039-040-000	C-TR, MMBT3904		C302	87-010-178-080		CHIP CAP 1000P
	SA-010-372-000	TR, 2SA1037AKQ		C303	87-012-140-080		CAP 470P
	SA-038-800-250	TR, KTC3880Y		C304	87-010-185-080		C-CAP, S 3900P-50 B
	S3-146-319-525	TR, KTC3195Y		C306	87-010-196-080		CHIP CAPACITOR, 0.1-25
	SA-039-060-010	TR, SST3906		C307	87-010-315-080		C-CAP, S 27P-50 CH
	8Z-PC6-621-010	TR, KSP92		C308	87-010-196-080		CHIP CAPACITOR, 0.1-25
	8Z-PC6-627-080	C-TR, KST42		C309	87-010-189-080		C-CAP, S 8200P-50 B
	89-324-121-080	C-TR, 2SC2412K		C310	87-010-196-080		CHIP CAPACITOR, 0.1-25
	89-327-144-080	TR, 2SC2714Y		C312	87-010-197-080		CAP, CHIP 0.01 DM
	87-A30-315-080	TR, HIT5609		C315	87-010-313-080		CAP, CHIP 18P
DIODE				C316	87-010-319-080		C-CAP, S 56P-50 CH
	82-135-799-010	DIODE, IN4148		C317	87-010-147-080		C-CAP, S 3P-50 CH
	87-A40-587-080	ZENER, BZX55-C5V1 5.1V		C318	87-010-197-080		CAP, CHIP 0.01 DM
	S0-100-561-230	ZENER, BZX55-C5V6 5.6V		C319	87-010-197-080		CAP, CHIP 0.01 DM
	S0-100-621-210	ZENER, BZX55-C6V2 6.2V		C320	8Z-PC6-625-010		CAP, CER 470P-3K K B DE0707
	87-A40-583-080	ZENER, BZX55-C5V6		C322	87-010-154-080		CAP CHIP 10P
	87-A40-246-080	DIODE, IN4148 T-72		C323	87-A11-112-080		CAP, TC U 1000P-50 J CH
	87-A40-153-080	ZENER, BZX44/C27		C325	87-010-196-080		CHIP CAPACITOR, 0.1-25
	87-A40-586-080	DIODE, 1N4004		C326	87-010-196-080		CHIP CAPACITOR, 0.1-25
	8Z-PC6-640-080	ZENER, Z1200 200V 1W		C327	87-010-315-080		C-CAP, S 27P-50 CH
	87-A40-638-080	ZENER, BZX55-C12		C328	87-010-197-080		CAP, CHIP 0.01 DM
	87-A40-145-080	ZENER, BZX55/C7V5		C329	87-016-461-080		C-CAP, S 0.47-16F
	87-A40-585-080	ZENER, BZX55-C6V2		C330	87-010-196-080		CHIP CAPACITOR, 0.1-25
MAIN C.B				C331	87-010-197-080		CAP, CHIP 0.01 DM
BPF301	88-PCD-635-010	FLTR, SFE10.7MS2 -M		C332	87-010-320-080		CHIP CAP 68P
BPF302	8Z-PC6-617-010	FLTR, LTW33-450E		C333	87-010-197-080		CAP, CHIP 0.01 DM
BPF303	8Z-PC6-618-010	FLTR, DPX1025 -B/U		C334	87-010-319-080		C-CAP, S 56P-50 CH
C101	87-010-315-080	C-CAP, S 27P-50 CH		C335	87-010-319-080		C-CAP, S 56P-50 CH
C102	87-010-315-080	C-CAP, S 27P-50 CH		C336	87-010-378-040		CAP, E 10-16
C103	87-010-188-080	CAP, CHIP 6800P		C337	87-010-327-080		CAP, CHIP S 4P SL
C104	87-010-181-080	CAP, CHIP S 1800P		C338	87-010-178-080		CHIP CAP 1000P
C105	87-010-956-080	CHIP-CAP, S 0.068-25B		C339	87-010-196-080		CHIP CAPACITOR, 0.1-25
C106	87-010-189-080	C-CAP, S 8200P-50 B		C340	87-010-196-080		CHIP CAPACITOR, 0.1-25
C107	87-010-197-080	CAP, CHIP 0.01 DM		C341	87-010-196-080		CHIP CAPACITOR, 0.1-25
C108	87-010-380-040	CAP, E 47-16 SME		C342	87-010-314-080		C-CAP, S 22P-50V
C109	87-010-805-080	CAP, S 1-16		C344	87-012-156-080		C-CAP, S 220P-50 CH
C110	87-016-461-080	C-CAP, S 0.47-16F		C345	87-012-156-080		C-CAP, S 220P-50 CH
C111	87-010-178-080	CHIP CAP 1000P		C346	87-010-186-080		CAP, CHIP 4700P
C112	87-010-178-080	CHIP CAP 1000P		C348	87-010-196-080		CHIP CAPACITOR, 0.1-25
C113	87-010-178-080	CHIP CAP 1000P		C349	87-010-185-080		C-CAP, S 3900P-50 B
C114	87-012-145-080	CAP, CHIP S 270P CH		C350	87-010-196-080		CHIP CAPACITOR, 0.1-25
C115	87-010-378-040	CAP, E 10-16		C351	87-010-196-080		CHIP CAPACITOR, 0.1-25
C116	87-010-175-080	CAP 560P		C352	87-010-181-080		CAP, CHIP S 1800P
C201	87-A11-064-010	CAP, M/P 0.47-250 K MMCFO250K 4		C353	87-A11-747-080		C-CAP, S 0.15-25 Z F
C202	87-010-198-080	CAP, CHIP 0.022		C354	87-010-182-080		C-CAP, S 2200P-50 B
C203	87-010-976-080	CAP, CER 1000P-500 B		C355	87-A11-747-080		C-CAP, S 0.15-25 Z F
C204	87-010-976-080	CAP, CER 1000P-500 B		C356	87-010-147-080		C-CAP, S 3P-50 CH
C205	87-010-184-080	CHIP CAPACITOR 3300P(K)		C357	87-010-197-080		CAP, CHIP 0.01 DM
C206	87-010-322-080	C-CAP, S 100P-50 CH		C358	87-010-197-080		CAP, CHIP 0.01 DM
C207	87-012-141-080	CHIP-CAPACITOR, 0.22-16F		C359	87-010-196-080		CHIP CAPACITOR, 0.1-25
C208	87-010-112-040	CAP, E 100-16		C360	87-010-178-080		CHIP CAP 1000P
C209	87-010-197-080	CAP, CHIP 0.01 DM		C361	87-010-318-080		C-CAP, S 47P-50 CH
C210	87-010-196-080	CHIP CAPACITOR, 0.1-25		C364	87-010-178-080		CHIP CAP 1000P
C211	87-010-322-080	C-CAP, S 100P-50 CH		C365	87-012-156-080		C-CAP, S 220P-50 CH
				C370	87-010-378-040		CAP, E 10-16
				C371	87-010-378-040		CAP, E 10-16
				C372	87-010-402-040		CAP, E 2.2-50 SME
				C373	87-010-992-080		C-CAP, S 0.047-25 B
				C374	87-010-378-040		CAP, E 10-16

REF. NO	PART NO.	KANRI NO.	DESCRIPTION	REF. NO	PART NO.	KANRI NO.	DESCRIPTION
C376	87-010-402-040	CAP,E 2.2-50 SME		X101	8Z-PC6-622-010	VIB,6.00MHZ ZTA6.00MT	
C377	87-010-402-040	CAP,E 2.2-50 SME		X301	8Z-PC6-615-010	VIB,11.15MHZ HC-49/U	
C381	87-010-378-040	CAP,E 10-16					
C382	87-010-178-080	CHIP CAP 1000P					
C390	87-010-312-080	C-CAP,S 15P-50 CH		HS-RF C.B			
C391	87-010-312-080	C-CAP,S 15P-50 CH		C12	87-010-075-040	CAP,E 10-16V	
C501	87-010-976-080	CAP,CER 1000P-500 B		C15	87-010-380-010	CAP,E 47-16V	
C502	87-010-976-080	CAP,CER 1000P-500 B		C16	87-015-696-080	CAP,E 2.2-50V	
C503	87-010-976-080	CAP,CER 1000P-500 B		C19	87-010-545-010	CAP,E 0.22-50V	
C504	87-010-976-080	CAP,CER 1000P-500 B		C24	87-010-075-040	CAP,E 10-16V	
C505	87-010-388-010	CAP, ELECT 1000-25SME		C30	87-015-696-080	CAP,E 2.2-50V	
C506	87-010-178-080	CHIP CAP 1000P		C33	87-010-380-010	CAP,E 47-16V	
C507	87-010-235-040	CAP,E 470-16 M 11L SME		C65	87-010-400-010	CAP,E 0.47-50V	
C508	87-010-380-040	CAP,E 47-16 SME		C85	87-010-380-010	CAP,E 47-16V	
C509	87-010-178-080	CHIP CAP 1000P		C87	87-010-264-040	CAP,E 100-10V	
C510	87-010-976-080	CAP,CER 1000P-500 B		D1	87-A40-226-080	DIODE,SVC251SPA	
C511	87-010-976-080	CAP,CER 1000P-500 B		DX1	S3-001-650-000	DUPLEXER 31/40MHZ	
C512	87-010-976-080	CAP,CER 1000P-500 B		IFT1	S0-002-860-070	IFT,KL286N	
C513	87-010-976-080	CAP,CER 1000P-500 B		IFT2	S0-075-600-070	IFT,7MM 455KHZ	
C514	87-010-101-010	CAP,E 220-16 SME		IFT3	S0-002-760-070	IFT,KL276N	
C515	87-010-197-080	CAP, CHIP 0.01 DM		IFT4	S0-002-741-070	IFT,KL274N	
J201	88-PCD-615-010	JACK,MODULAR 2 P E5562-000111		IFT5	S0-002-770-070	IFT,KL277N	
J501	8Z-PC6-611-010	JACK,MODULAR 6 P E5764-0003P3		J1	S0-200-2P1-500	HEADER KINDTECH 15P	
L101	8Z-PC6-620-080	COIL,100UH K LAL02		L1	87-003-106-010	INDUCTOR,0.33UH	
L102	8Z-PC6-620-080	COIL,100UH K LAL02		L2	87-005-166-010	INDUCTOR,1.2UH	
L201	87-005-126-080	COIL,1MH		L3	87-005-674-080	INDUCTOR,1.5UH	
L202	87-005-126-080	COIL,1MH		L4	S0-100-152-010	INDUCTOR,10UH	
L301	87-A50-472-010	COIL,0.72UH K KYN		L5	87-003-133-010	INDUCTOR,0.22UH	
L302	87-A50-368-010	COIL,0.33UH K KYN		T1	S0-004-500-180	CER,FILTER LTW33-450E	
L304	8Z-PC6-626-080	COIL,3.9UH K LAL02		VR1	S1-030-850-000	SFR,10K	
L305	87-A50-474-010	COIL,2.7UH LAL03		VR3	S1-030-850-000	SFR,10K	
L306	87-A50-473-010	COIL,0.82UH K KYN		X1	S6-111-501-000	X'TAL,11.15MHZ	
L307	87-A50-447-010	COIL,37UH K 5M4A756N		X2	S0-001-070-010	CER,FILTER 10.7MHz	
L308	88-PCD-656-010	COIL,182 46MHZ		X3	S3-327-681-000	X'TAL,32.768KHZ	
L309	87-005-272-080	COIL,22UH		X4	S0-006-000-010	CER,FILTER 6.00MHz	
L310	87-005-230-080	COIL,0.56UH M LAL03					
L501	87-003-136-080	COIL,100MH		HAND KEY C.B			
L502	87-003-136-080	COIL,100MH		B1	SB-2BE-HA0-200	HEADER JST 2PIN	
L503	87-003-136-080	COIL,100MH		L1	87-003-150-080	INDUCTOR 68UH	
L504	87-005-239-080	COIL,100UH		L2	87-003-150-080	INDUCTOR 68UH	
L505	87-005-239-080	COIL,100UH		LED1	S0-321-610-010	C-LED,3.2-1.6 (RED)	
L506	87-005-239-080	COIL,100UH		LED2	S0-321-610-010	C-LED,3.2-1.6 (RED)	
LED101	88-PCD-655-080	LED,SE-3001DT RED		LED3	S0-049-410-030	LED,3MM(GRN)	
LED102	88-PCD-655-080	LED,SE-3001DT RED		LED4	S0-049-410-030	LED,3MM(GRN)	
SCR201	87-A91-039-010	VRIS,SAS-391KD07		LED5	S0-049-410-030	LED,3MM(GRN)	
SCR301	87-A40-226-080	VARI-CAP,SVC251SPA		LED6	S0-049-410-030	LED,3MM(GRN)	
SFR303	87-A91-035-080	SFR,100K H EVNDXAA03B15					
SW101	87-A91-036-010	SW,SL 2-2-2 SKA-22D10-G4-NA					
SW102	8Z-PC6-623-010	SW,TACT 1102-4					
TC301	87-A91-180-010	TRIMMER,30P CVN6D030A					

- Regarding connectors, they are not stocked as they are not the initial order items.
The connectors are available after they are supplied from connector manufacturers upon the order is received.

IC BLOCK DIAGRAM
IC, TEA1062

チップ抵抗部品コード／CHIP RESISTOR PART CODE

チップ抵抗部品コードの成り立ち

Chip Resistor Part Coding




A
抵抗部品コード
Resistor Code

桁表示
Figure

抵抗値
Value of resistor

チップ抵抗
Chip resistor

容量 Wattage	種類 Type	許容誤差 Tolerance	記号 Symbol	寸法／Dimensions (mm)				抵抗コード Resistor Code : A
				外形／Form	L	W	t	
1/16W	1005	± 5%	CJ		1.0	0.5	0.35	104
1/16W	1608	± 5%	CJ		1.6	0.8	0.45	108
1/10W	2125	± 5%	CJ		2	1.25	0.45	118
1/8W	3216	± 5%	CJ		3.2	1.6	0.55	128

TRANSISTOR ILLUSTRATION



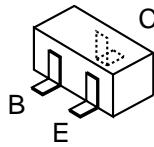
E C B

2SC2714
KTC3195
HIT5609

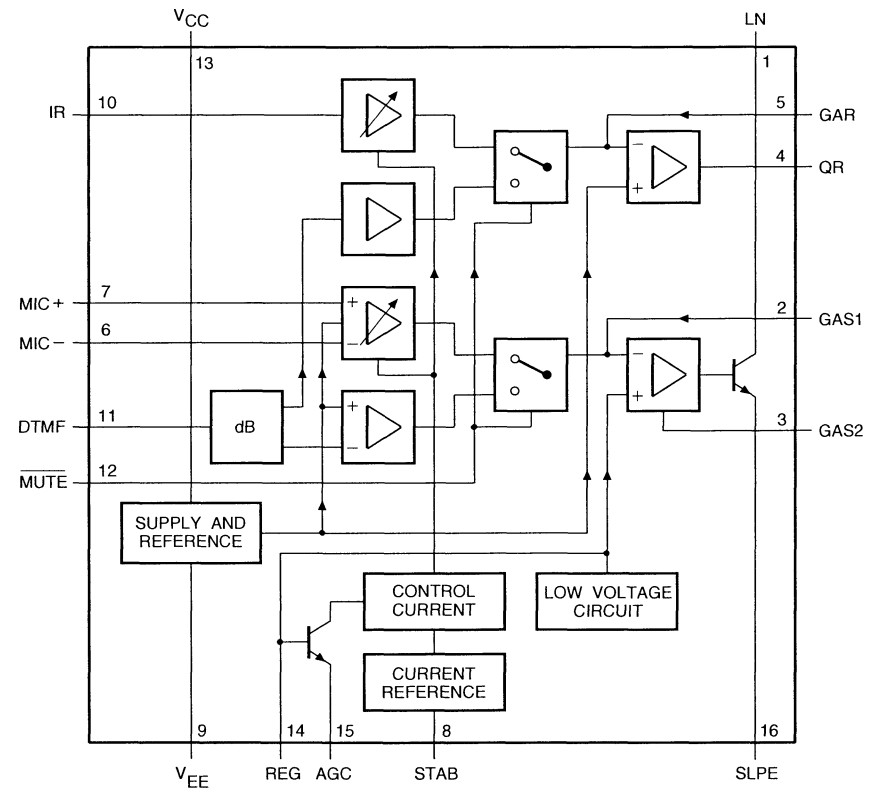


E B C

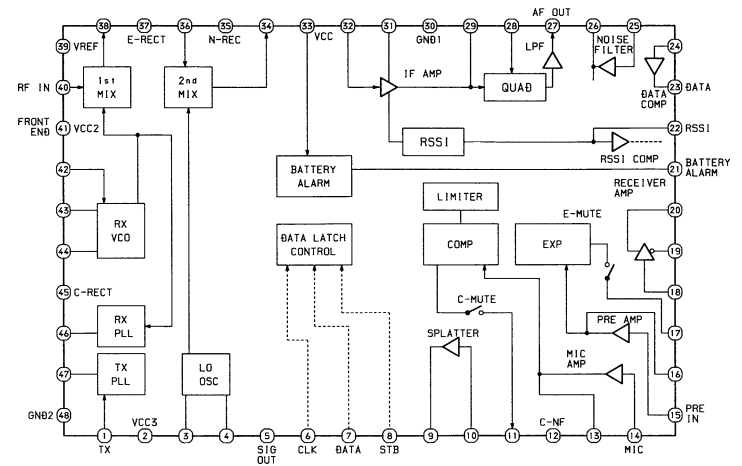
KSP92



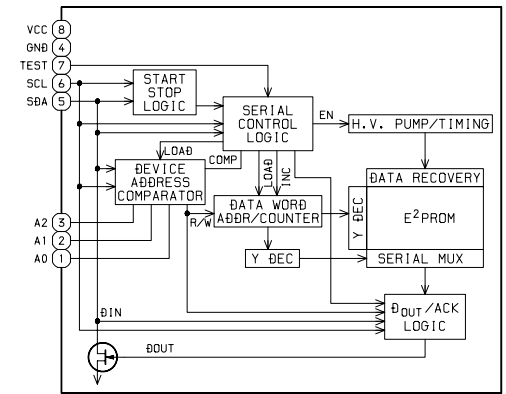
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KTC3880
MMBT3904
SST3906
2SC2412
KST42

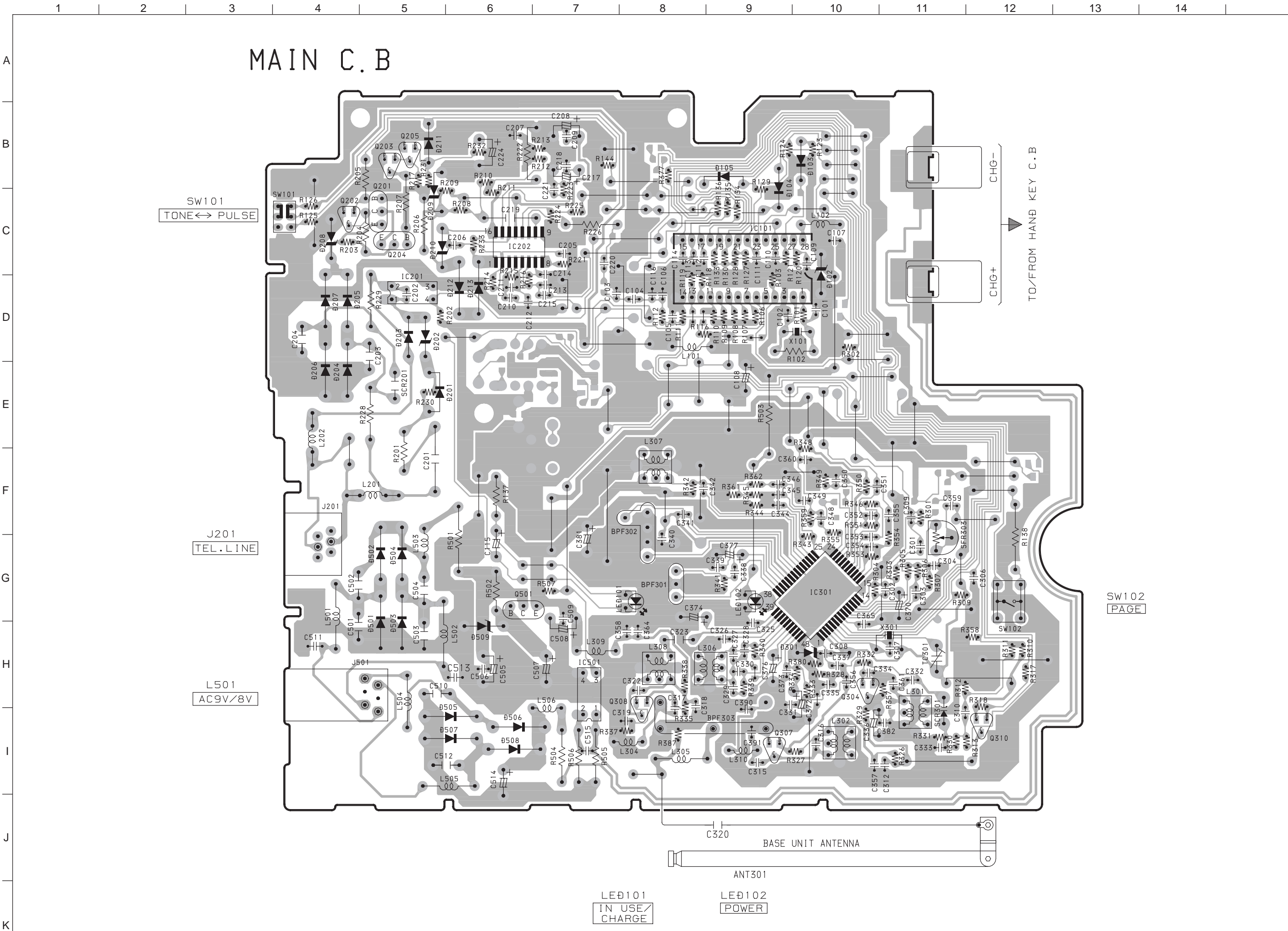


IC, TB31224F

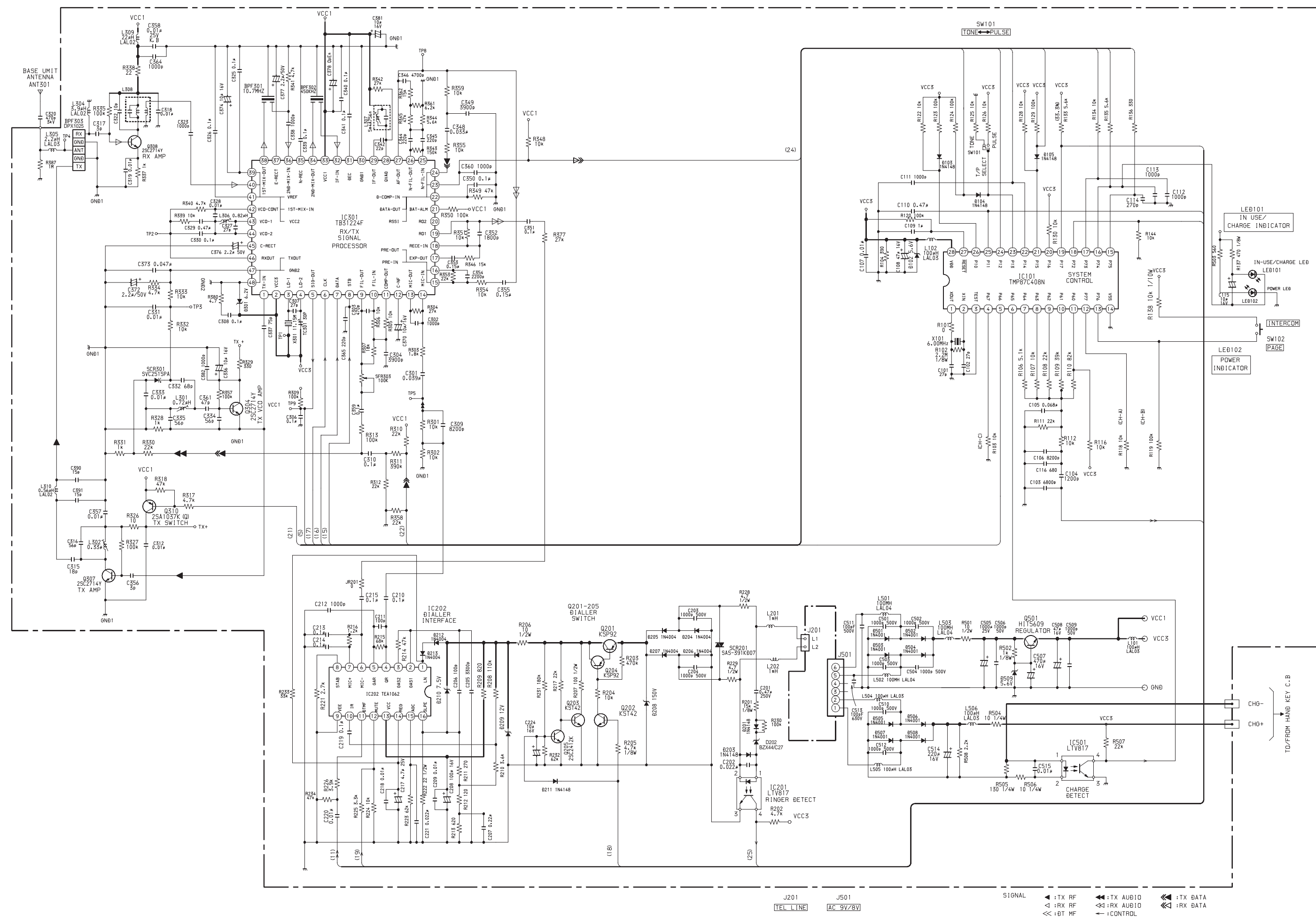


IC, AT24C01A-10SC

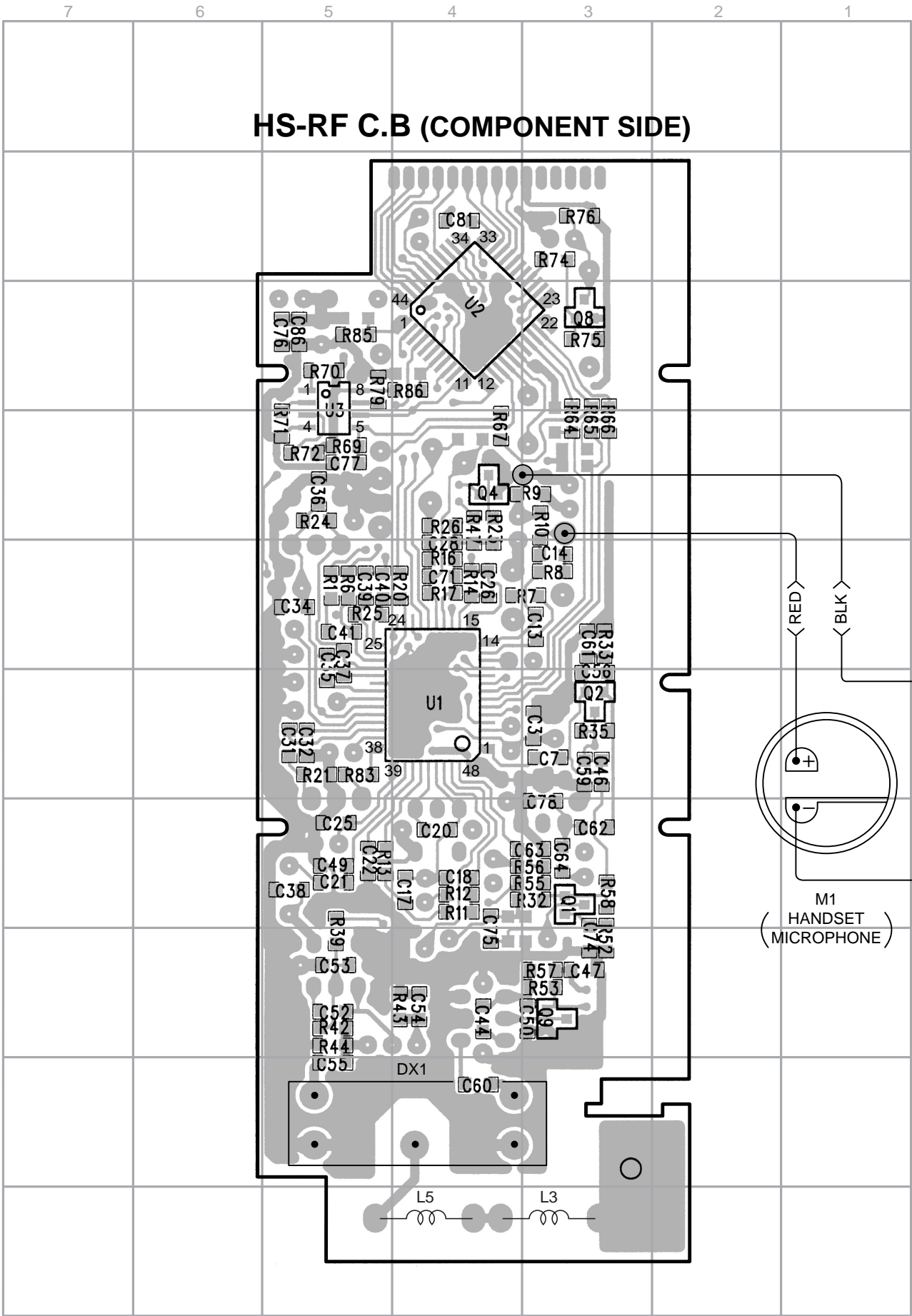




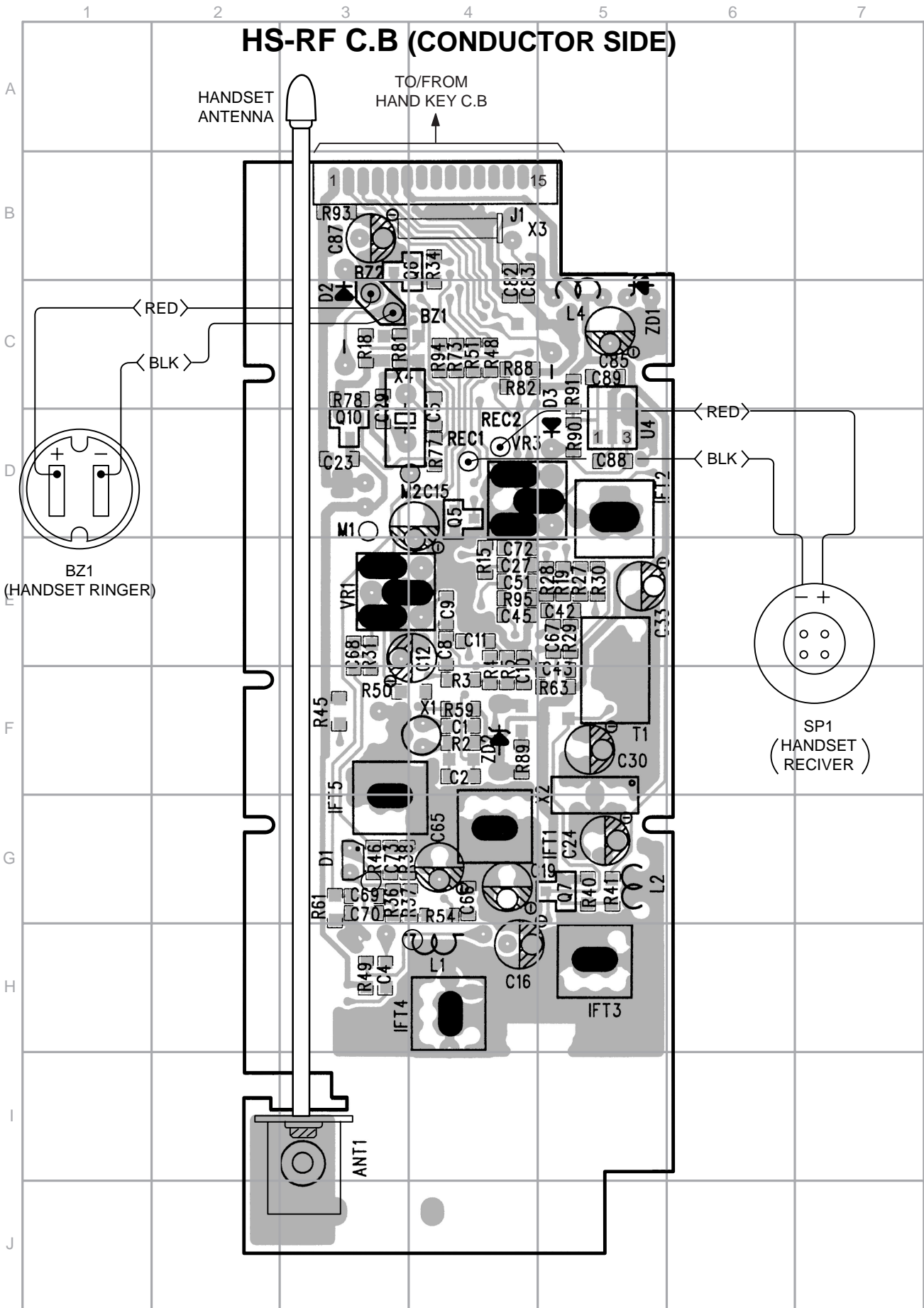
SCHEMATIC DIAGRAM-1 (MAIN)

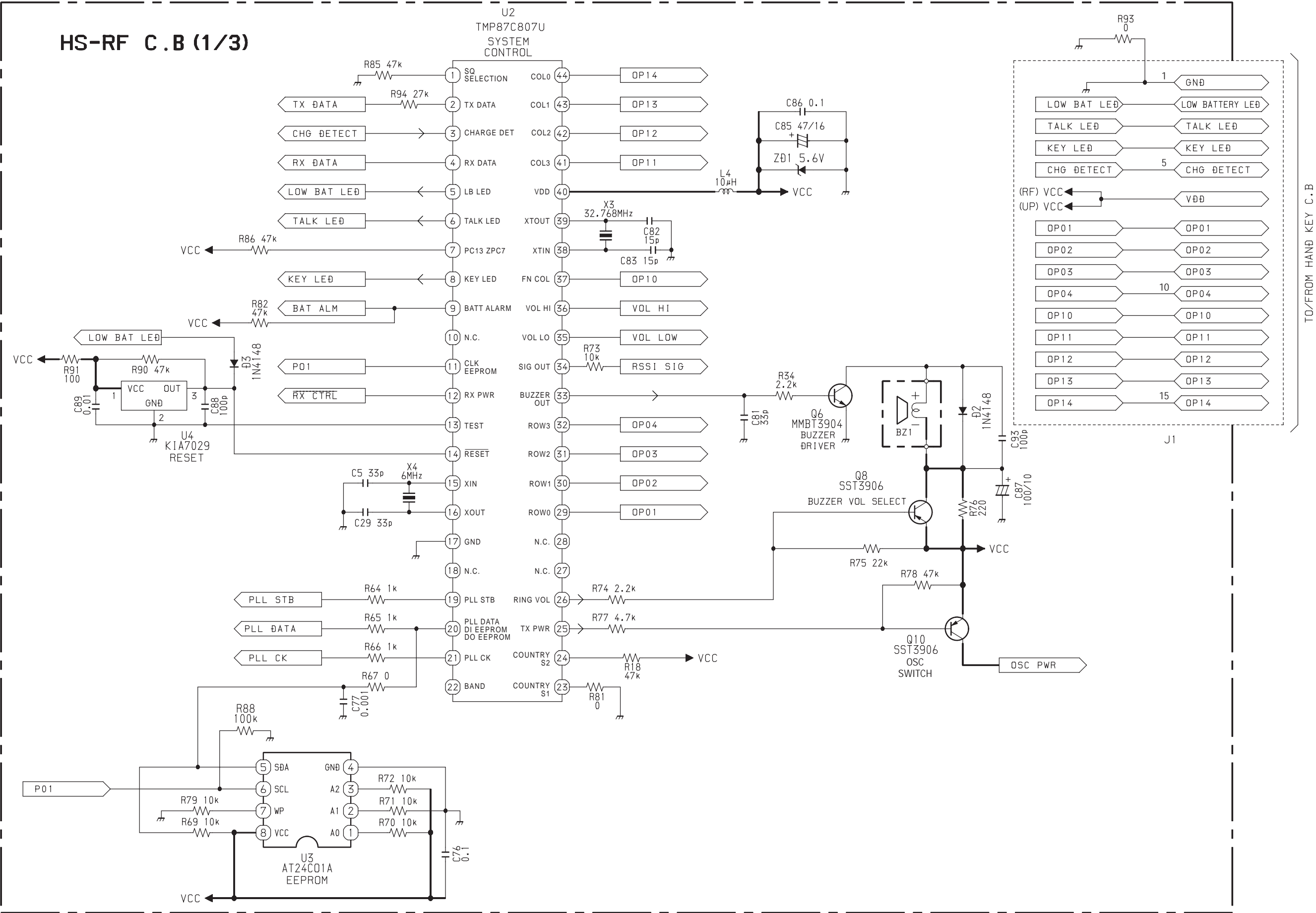


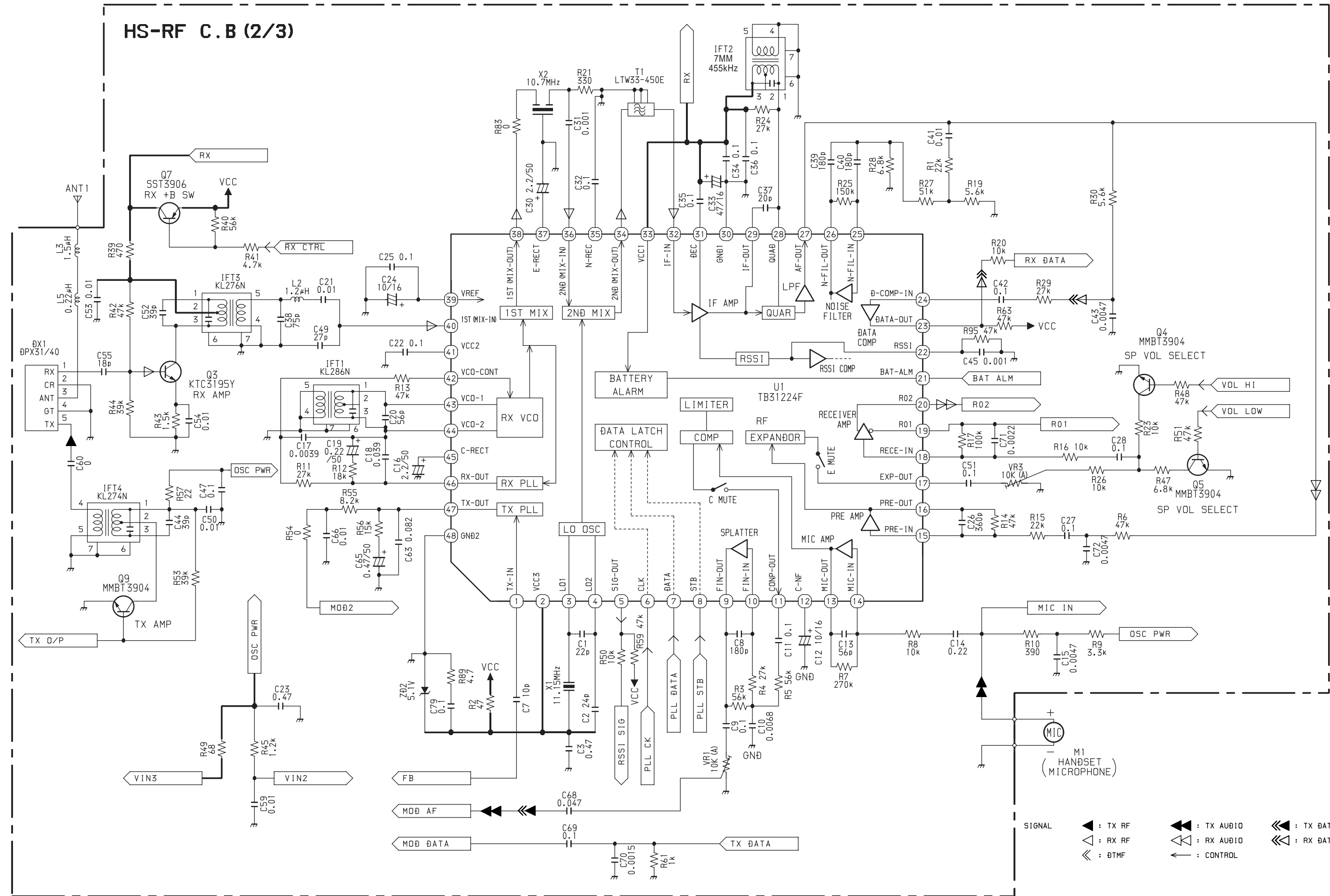
WIRING-2 (HS-RF: COMPONENT)

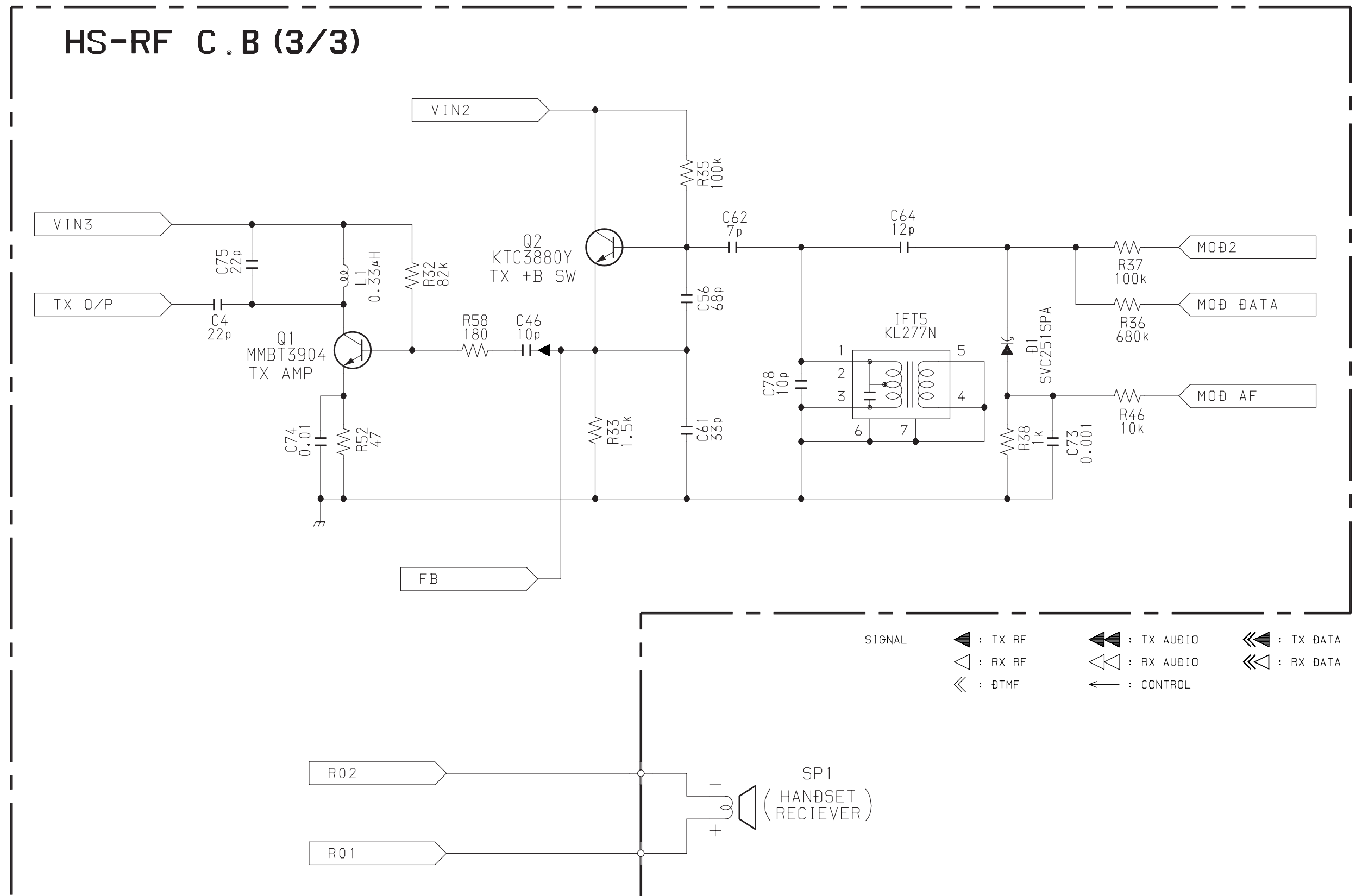


WIRING-3 (HS-RF: CONDUCTOR)









HAND-KEY C.B.

TO/FROM HS-RF C.B
CON1

TO/FROM MAIN C.B.

Nickel-Cadmium Battery
3.6V DC

LED2 TALK

LED1 BATT. LOW

SW15 TALK

SW1 MEMORY

SW17 1

SW18 2

SW19 3

SW12 4

SW13 5

SW14 6

SW7 7

SW8 8

SW9 9

LED3,4,5,6
(KEY BACK LIGHT)

SW2 *

SW3 0

SW4 #

SW11 R/P

SW6 R

SW5 STORE

SW16 CH

SW10 VOL

SW20 MUTE

HAND KEY C.B

TO/FROM MAIN C.B

TO/FROM HS-RF C.B

Legend:

- TX DATA
- TX AUDIO
- RX DATA
- RX AUDIO
- CONTROL

IC DESCRIPTION

IC, TMP87C408N

Pin No.	Pin Name	I/O	Description
1	XOUT	O	Oscillator out
2	XIN	I	Oscillator in
3	TEST	I	Tied low
4	HOOK CONT SPK MUTE	O	Hook control output (for corded phone): 0 = OFF HOOK, 1 = ON HOOK For ZPC-6: this pin is used as Speaker Amp, IC Mute Control) (the Mic Mute control is controlled by hardware: unmute mic when Speaker is unmute and charge not detected)
5	SIG OUT	I	Received Signal Strength Indicator: (TB31224F SIG OUT pin) 0 = carrier present, 1 = carrier absent NOISE DETECT 0 = Rx unlock, 1 = Rx lock Rx LOCK DETECT 0 = Tx unlock, 1 = Tx lock Tx LOCK DETECT
6	CHAG DET CLK EEPROM	I/O	Charge detect: 0 = charging, 1 = not charging. Clock of EEPROM
7	DTMF4	O	DTMF data pin 4 (Most Significant Bit)
8-10	DTMF3-DTMF1	O	DTMF data pin 3-1
11	DTMF0 COUNTRY S2	I/O	DTMF data pin 0 (Least Significant Bit) Country option select 2.
12	RING OFF COUNTRY S1	I/O	Control the shunt resistor: 1 = shunt a resistor (For U, K ONLY) Country option select 1
13	PAGE KEY	I	PAGE key: 1 = PAGE ON, 0 = STANDBY
14	GND	—	Ground
15	PLL STB	O	Combo chip strobe signal (TB31224F)
16	PLL DATA U LED	O	Combo chip data signal (TB31224F). In-use LED: 1 = ON, 0 = OFF.
17	PLL CK DO EEPROM DI EEPROM	I/O	Combo chip clk signal (TB31224F). Data Input/Output of EEPROM.
18	TL RELAY	O	Line seize: 1 = line seize, 0 = off-hook
19	TL MUTE M B SEL	I/O	Telephone Line Mute Control: 1 = MUTE. Make/Break Ratio Select 1 = 33.3%, 0 = 40%
20	HOOK DET	I	Hook detect input (for Corded Phone). 1 = ON HOOK, 0 = OFF HOOK REMARK: this pin is always PULL-HIGH for ZPC-7 or ZPC-6 (I. e. just imagine Corded phone is Always ON HOOK)
21	TX PWR SECRET OPT	I/O	Tx power control: 0 = ON, 1 = OFF. Secret function option: 1 = YES, 0 = NO REMARK: this PULL LOW for ZPC-7 or ZPC-6 (I. e. Secret opt is DISABLED)
22	TX DATA	O	Transmit data output
23	BUZZER T P SEL	I/O	Buzzer signal (key tone and paging sound ONLY) Tone/Pulse selection: 1 = Pulse, 0 = Tone
24	RX DATA	I	Received data input
25	RING DET	I	Ring detect input: 1 = OFF, 0 = RING COME (MC34012)
26	BAND SQ SELECTION	I/O	Shunt capacitor for U.S. Frequency Higher Band: 1 = shunt Cap, OUT OF RANGE FUNCTION: 1 = YES, 0 = NO
27	RESET	I	Normally High, Low to reset MCU
28	POWER	—	Power (VCC)

IC, TB31224F

Pin No.	Pin Name	I/O	Description	
1	TX-IN	I	Input terminal of TX VCO oscillation signal.	
2	VCC3	—	Power supply terminal.	
3, 4	LO-1, LO-2	O	LOCAL OSCILLATOR input and output terminals. Colpitts oscillator is formed by internal emitter follower and external X'tal. And external injection is possible from pin 3.	
5	SIG OUT	O	Output terminal of detection signal. It is the open drain output.	
6	CLK	I	Input terminal of clock.	Input the serial data for controlling IC.
7	DATA	I	Input terminal of serial data.	
8	STB	I	Input terminal of strobe signal.	
9	FIL-OUT	O	Output of FILTER AMP.	
10	FIL-IN	I	Input of FILTER AMP.	
11	COMP-OUT	O	Output of COMPRESSOR.	
12	C-NF	—	Feedback circuit of T type is formed by external capacitor with SUM AMP.	
13	MIC-OUT	O	Output of MIC AMP and connected directly to input of SUM AMP.	
14	MIC-IN	I	Input terminal of MIC AMP.	
15	PRE-IN	I	Inverted input of PRE AMP.	
16	PRE-OUT	O	Output of PRE AMP. Connected directly to EXPANDER.	
17	EXP-OUT	O	Output of SUM AMP at EXPANDER. The signal from gain cell is gained by inverted amp.	
18	RECE-IN	I	Inverted input of RECEIVER AMP.	
19	RO1	O	Receiving output for a dynamic receiver.	
20	RO2	O	Used for BTL output type with RO1 terminal when a ceramic receiver is used.	
21	BAT-ALM	O	BATTERY ALARM terminals. When VCC decrease VBAT-L, This terminal outputs “H” level. Detection voltage is controlled by data bit. This terminal is open collector output.	
22	RSS1	O	This terminal outputs DC level according to input signal level to IF AMP. Dynamic range is around 70dB.	
23	DATA-OUT	O	Output terminal for wave form shaping. This terminal is open collector output.	
24	D-COMP-IN	I	DATA COMPARATOR input terminal. This terminal input demodulation signal of DATA.	
25	N FIL-IN	I	NOISE FILTER input and output terminals. BPF is composed of external capacitors and resistors. Connected internally to rectifier circuit by coupling capacitor.	
26	N FIL-OUT	O		
27	AF-OUT	O	Demodulated signal output terminal. Carrier leak is small as LPF is built-in. Output impedance is around 360Ω.	
28	QUAD	I	Phase shift signal input terminal of FM demodulator.	
29	IF-OUT	O	Output terminal of IF AMP.	
30	GND1	—	GND terminal.	
31	DEC	I	2nd IF input and decoupling for bias. Input impedance is around 1.5kΩ.	
32	IF-IN	I		
33	VCC1	—	Power supply terminal.	
34	2ND MIX-OUT	O	MIX output terminal. Output impedance is around 1.5kΩ.	

Pin No.	Pin Name	I/O	Description
35	N-REC	O	After output of NOISE FILTER amplified around 20dB, noise signal is rectified by external capacitor.
36	2ND MIX-IN	I	1st IF signal input terminal. Input impedance is around 4.7k Ω at 10.695MHz.
37	E-RECT	O	Connected capacitor for full-wave rectifier circuit of EXPANDER.
38	1ST MIX-OUT	O	MIX output terminals. Externally connects filters. Output impedance is 330 Ω . (Typ.)
39	VREF	—	Reference terminal through internal buffer of compander block.
40	1ST MIX-IN	I	MIX input terminal. Double-balance MIX.
41	VCC2	—	Regulator terminal. Output voltage is 2.0V.
42	VCO-CONT	I	Voltage control terminal of RX-VCO.
43, 44	VCO-1, VCO-2	I	They are resonance terminals of RX-VCO.
45	C-RECT	—	Terminal for rectifier of COMPRESSOR. Almost the same circuit as E-RECT terminal.
46	RX-OUT	O	Output terminal of CHARGE PUMP. CHARGE PUMP is constant current output circuit, and output current is varied by input serial data.
47	TX-OUT	O	
48	GND2	—	GND terminal.

1. General description

TB31224F is controlled by serial parts pin 6, 7, 8, and makes all situations by these serial bits for RF part in 46/49MHz cordless telephone such as intermittent receiving state.

Not only 46/49MHz cordless telephone but CT0 cordless phone that has frequency spec. between about 20MHz and 60MHz can be also set up TB31224F.

IC, TMP87C807U

Pin No.	Pin Name	I/O	Description
1	SQ SELECTION	I	OUT OF RANGE FUNCTION: 1 = YES, 0 = NO
2	TX DATA	O	Transmitted data
3	CHARGE DET	I	Charge detect: 1 = charging, 0 = not charging
4	RX DATA	I	Received data (INT3/TC3)
5	LB LED	O	Low battery led (High current port): 1 = ON
6	TALK LED	O	Talk led (High current port): 0 = ON
7	PC13 ZPC7	I	Power save mode. Hi: NO, Lo = YES
8	KEY LED	O	Keypad LED: 0 = ON
9	BATT ALARM	I	Battery low detect: 0 = battery ok, 1 = battery low (3.25 V). (Use COMBO chip TB31224F battery detect function)
10	N.C.	—	Not connected.
11	CLK EEPROM	O	Clock of EEPROM
12	RX PWR	O	Rx power control : 0 = ON, 1 = OFF.
13	TEST	—	Tied to low
14	$\overline{\text{RESET}}$	I	Normally High, low to reset MCU.
15	XIN	I	Resonator in (3.58 MHz)
16	XOUT	O	Resonator out (3.58 MHz)
17	GND	—	Ground
18	N.C.	—	Not connected.
19	PLL STB	O	Combo chip strobe signal input.
20	PLL DATA DI EEPROM DO EEPROM	I/O	Combo chip data signal input. Data input of EEPROM. Data output of EEPROM.
21	PLL CK	O	Combo chip clock signal output.
22	BAND	O	Shunt capacitor for U.S. frequency high band: 1 = shunt capacitor.
23, 24	COUNTRY S1, S2	I	Country channel table selection 1, 2.
25	TX PWR	O	TX power control : 0 = ON, 1 = OFF.
26	RING VOL	O	Ringer volume control
27, 28	N.C.	—	Not connected.
29-32	ROW0-ROW3	O	Keypad column output #0-#3
33	BUZZER OUT	O	Buzzer signal
34	SIG OUT	I	Received signal strength indicator: (TB31224F SIG OUT Pin) 0 = carrier present, 1 = carrier absent 0 = Rx unlock, 1 = Rx lock 0 = Tx unlock, 1 = Tx lock
35	VOL LO	O	Receiver volume control 1 (Lo)
36	VOL HI	O	Receiver volume control 2 (Hi)
37	FN COL	I	Function key column input (INT5)
38	XTIN	I	32.768 kHz crystal
39	XTOUT	O	32.768 kHz crystal
40	VDD	—	Power (VCC)
41-44	COL3-COL0	I	Keypad column input #0-#3

VOLTAGE CHART

< B/U-MAIN >

IC202 (SPEECH)

	WAITING (V)	TALIKING (V)	CHARGING (V)
1	0	3.7	0
2	0-0.1	2	0-0.1
3	0-0.1	2	0-0.1
4	0.3	2.2	0.2
5	0.2	2.2	0.2
6	0.2	2.2	0.2
7	0.2	2.2	0.2
8	0	0.1	0
9	0	0	0
10	0.2	1.2	0.2
11	0.1	2.2	0.1
12	0.2	0.2	0.2
13	0	4.4	0
14	0	2	0
15	0	0.8	0
16	0	0.8	0

IC301 (RF)

	WAITING (V)	TALIKING (V)	CHARGING (V)
1	5	5	5
2	5	5	5
3	4.9	4.9	4.9
4	4.6	4.6	4.6
5	4.9	0.02	4.9
6	0.02	0	0.03
7	4.8	0.4	0.4
8	0	0	0
9	0.7	1.4	0.7
10	0.7	1.4	0.7
11	0.7	1.4	0.7
12	0.8	1.4	0.8
13	0.8	1.4	0.8
14	0.8	1.4	0.8
15	1.5	1.4	1.4
16	1.5	1.4	1.4
17	1.5	1.4	1.4
18	1.2	1.2	1.2
19	1.2	1.2	1.2
20	1.2	1.2	1.2
21	0.01	0	0.01
22	0.4	1.1	0.4
23	2.4	2.5	2.5
24	0.7	0.7	0.7
25	0.6	0.6	0.6
26	0.7	1.5	0.7
27	1-1.2	1.1	1
28	5	5	5
29	4.1	4.1	4.1
30	0	0	0
31	4.6	4.6	4.6
32	4.6	4.6	4.6
33	5	5	5
34	3.6	3.7	3.6
35	1.2	0.06	1.2
36	1	1	1

IC201 (MCU)

	WAITING (V)	TALIKING (V)	CHARGING (V)
37	1.3	0.7	1.3
38	3.5	3.7	3.5
39	1.5	1.5	1.5
40	1	1	1
41	2.1	2.1	2.1
42	2.1	2.1	2
43	5	5	5
44	5	5	5
45	0.3	0.7	0.3
46	2	2.1	2.1
47	1.3	3.7	2
48	0	0	0

	WAITING (V)	TALIKING (V)	CHARGING (V)
1	2.1	2.1	2.1
2	2	2	2
3	0	0	0
4	0	0	0
5	4.9	0.02	4.9
6	4.9	4.9	0.03
7	0	0	0
8	0	0	0
9	0	0	0
10	0	0	0
11	0.03	0.03	0.03
12	0	0	0
13	0	0	0
14	0	0	0
15	0	0	0
16	4.8	0.4	0.4
17	0.03	0	0.03
18	0	4.6	0
19	0.3	0.3	0.3
20	0.01	0.01	0.01
21	4.7	0.06	4.7
22	2.4	2.4	2.4
23	5	5	5
24	2.5	2.5	2.4
25	5	5	5
26	0-0.04	0.05	0-0.4
27	4.8	4.8	4.8
28	4.8	4.8	4.8

Q201

	WAITING (V)	TALIKING (V)	CHARGING (V)
E	49.4	6.4	49.2
C	0	5.6	0
B	47.3	56	47.1

Q202

	WAITING (V)	TALIKING (V)	CHARGING (V)
E	0	0	0
C	29.8	0.01	30.1
B	0	0.7	0

Q203

	WAITING (V)	TALIKING (V)	CHARGING (V)
E	0	0	0
C	0	5.6	0
B	0	0.5	0

Q204

	WAITING (V)	TALIKING (V)	CHARGING (V)
E	47.4	5.6	47.2
C	0	5.6	0
B	30.1	4.9	29.1

Q205

	WAITING (V)	TALIKING (V)	CHARGING (V)
E	0	0	0
C	0	0.5	0
B	0	0.6	0

Q304

	WAITING (V)	TALIKING (V)	CHARGING (V)
E	0	2.1	0
C	0.2	4.3	0.2
B	0.2	2.6	0.2

Q310

	WAITING (V)	TALIKING (V)	CHARGING (V)
E	5	5	5
C	0.3	4.9	0.3
B	4.9	4.3	4.9

Q307

	WAITING (V)	TALIKING (V)	CHARGING (V)
E	0	0	0
C	0.2	4.9	0.2
B	0.2	0.6	0.2

Q308

	WAITING (V)	TALIKING (V)	CHARGING (V)
E	2.3	2.3	2.3
C	4.9	4.9	4.9
B	2.7	2.6	2.7

Q501

	WAITING (V)	TALIKING (V)	CHARGING (V)
E	5	5	5
C	10.8	10.3	10.2
B	5.6	5.6	5.6

< H/S-RF >

IC-U4 (RESET)

	WAITING (V)	TALIKING (V)	CHARGING (V)
1	3.8	3.8	3.8
2	0	0	0
3	3.8	3.8	3.8

IC-U3 (EEPROM)

	WAITING (V)	TALIKING (V)	CHARGING (V)
1	3.8	3.8	3.8
2	0	0	0
3	3.8	3.8	3.8
4	0	0	0
5	3.8	3.8	3.8
6	0	0	0
7	0	0	0
8	3.8	3.8	3.8

IC-U2 (MCU)

	WAITING (V)	TALIKING (V)	CHARGING (V)
1	0	0	0
2	0	0	0
3	0	0	4.4
4	3.8	0-2.8	1.8
5	3.8	3.8	4.1
6	0	3.5	0
7	3.8	3.8	4.1
8	3.8	3.8	4.1
9	3.8	0.02	0.02
10	1.8	1.5	0
11	0	0	0
12	3.8	0.02	0.02
13	0	0	0
14	3.8	3.8	4.1
15	0-3	1.2	1.4
16	3.8	1.5	1.6
17	0	0	0
18	1.5	1.4	0-0.01
19	0	0	0
20	3.8	3.8	4.1
21	0	0	0
22	0	0	0-2.1
23	0	0	0.04
24	3.8	3.8	4.1

	WAITING (V)	TALIKING (V)	CHARGING (V)
25	3.8	0.04	4.1
26	3.8	3.8	4.1
27	1.5	1.5	0-0.01
28	1.5	1.5	0-0.01
29	0	0	0
30	0	0	0
31	0	0	0
32	0	0	0
33	0	0	0
34	3.8	3.8	4.1
35	0	3.8	0
36	3.8	0	4.1
37	3.8	3.8	4.1
38	1.3	1.3	1.5
39	2	2	2.2
40	3.8	3.8	4.1
41	3.8	3.8	4.1
42	3.8	3.8	4.1
43	3.8	3.8	4.1
44	3.8	3.8	4.1

IC-U1 (RF)

	WAITING (V)	TALIKING (V)	CHARGING (V)
1	3.8	3.7	3.9
2	3.8	3.7	3.9
3	0-1.4	3.7	3.9
4	0-1.4	3.3	3.5
5	3.8	0.03	4
6	0	0	0.04
7	3.8	3.8	4
8	0	0	0
9	0.1	1.4	0.1
10	0.1	1.4	0.1
11	0.3	1.4	0.3
12	0.3	1.4	0.3
13	0.3	1.4	0.3
14	0.3	1.4	0.3
15	0-0.2	1.4	0.01-0.2
16	0-0.2	1.4	0.01-0.2
17	0.1	1.4	0.1
18	0.01-0.1	1.2	0.1
19	0.01-0.1	1.2	0.1
20	0.01-0.1	1.2	0.1
21	0-3.8	0	0.02
22	0	1	0.2
23	0-3.8	0.01-1.8	1.8
24	0-0.06	0.7	0.7
25	0	0.7	0.7
26	0	0.7	0.7
27	0.01-0.8	0.7	1
28	0.1-1.1	3.8	4
29	0.1-1	2.8	3.1
30	0	0	0
31	0.1-1.2	3.4	3.6
32	0.1-1.2	3.4	3.6

	WAITING (V)	TALIKING (V)	CHARGING (V)
33	0.1-1.2	3.8	4
34	0.1-0.9	2.4	2.7
35	0	0.05	1.3
36	0.01-0.4	1	1
37	0.3	0.7	0.3
38	0.1-0.8	2.3	2.6
39	0.3	1.4	0.3
40	0-0.1	1	1
41	0.3-1.8	2	2
42	0-0.6	0.02	0-0.6
43	0.1-1.1	3.8	4
44	0-0.1	3.8	4
45	0.3	0.6	0.3
46	0-0.8	1.1	2.3
47	0.07	2.2	0.2
48	0	0	0

Q3

	WAITING (V)	TALIKING (V)	CHARGING (V)
E	0-0.2	0.8	0.8
C	0.1-1.2	3.5	3.5
B	0.5-1.5	1.5	1.5

Q7

	WAITING (V)	TALIKING (V)	CHARGING (V)
E	3.8	3.8	3.9
C	0.1-1.8	3.7	3.8
B	3.8	3.1	3.2

Q5

	WAITING (V)	TALIKING (V)	CHARGING (V)
E	0	0	0
C	0.02	0.02	0.02
B	0	0.5	0

Q6

	WAITING (V)	TALIKING (V)	CHARGING (V)
E	0	0	0
C	3.8	3.8	3.9
B	0	0	0

Q10

	WAITING (V)	TALIKING (V)	CHARGING (V)
E	3.8	3.8	3.9
C	0.2	3.7	0.1
B	3.8	3.1	3.9

Q8

	WAITING (V)	TALIKING (V)	CHARGING (V)
E	3.8	3.8	3.9
C	3.8	3.8	3.9
B	3.8	3.8	3.9

Q4

	WAITING (V)	TALIKING (V)	CHARGING (V)
E	0	0	0
C	0.04	0.04	0.04
B	0.6	0	0.6

Q2

	WAITING (V)	TALIKING (V)	CHARGING (V)
E	0	1.3	0
C	0.2	2.6	0.1
B	0.2	2	0.1

Q1

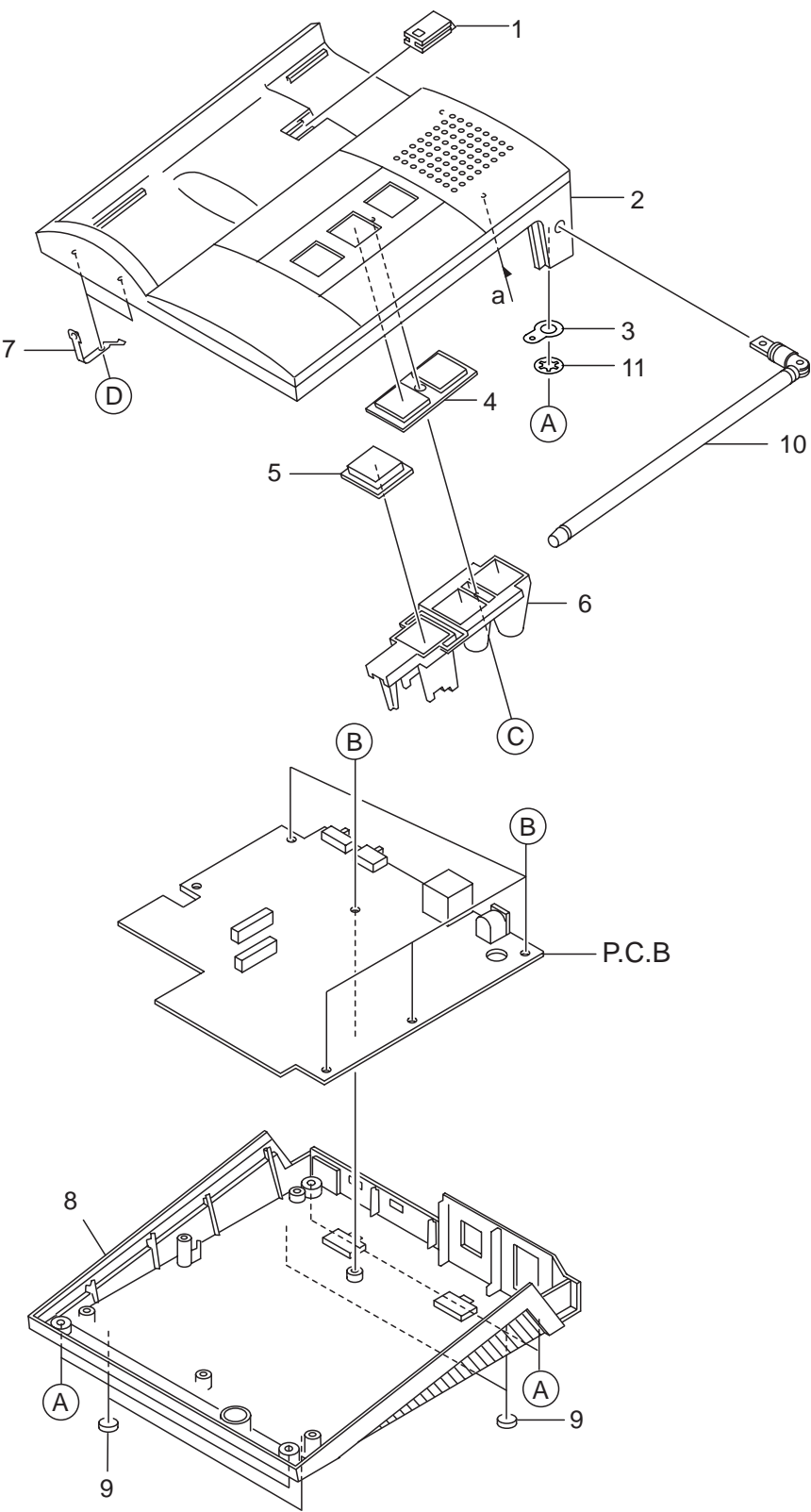
	WAITING (V)	TALIKING (V)	CHARGING (V)
E	0	0.2	0
C	0.2	3.4	0.1
B	0.2	1	0.1

Q9

	WAITING (V)	TALIKING (V)	CHARGING (V)
E	0	0	0
C	0.2	3.5	0.1
B	0.2	0.7	0.1

Q1

	WAITING (V)	TALIKING (V)	CHARGING (V)
E	3.8	1.5	4
C	0	0	0
B	3.8	3.8	4.1

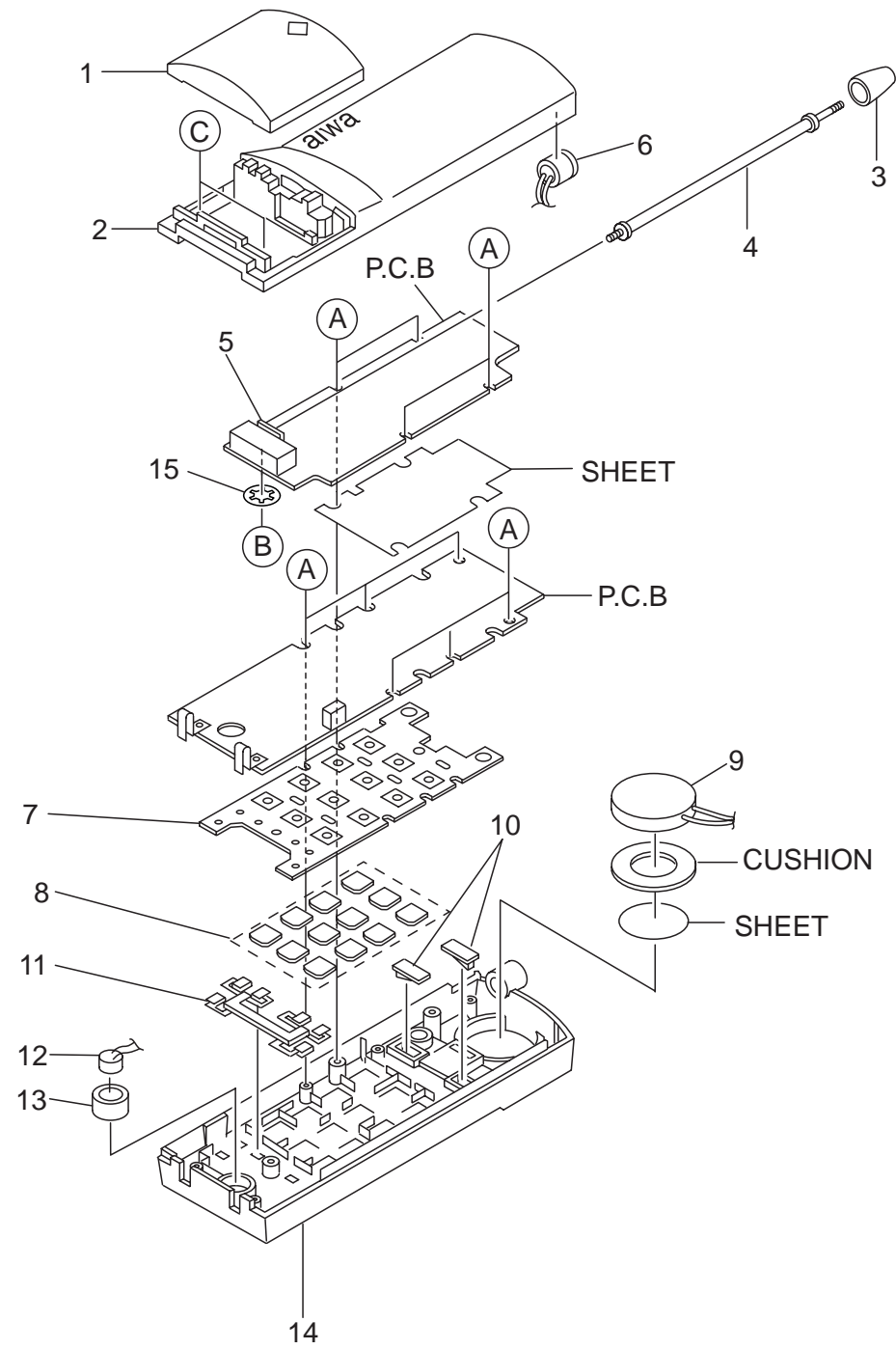


DESCRIPTIONで判断できない物は "REFERENCE NAME LIST" を参照してください。
If can't understand for Description please kindly refer to "REFERENCE NAME LIST".

REF. NO	PART NO.	KANRI NO.	DESCRIPTION	REF. NO	PART NO.	KANRI NO.	DESCRIPTION
1	88-PCD-006-010		HANGER,H/S BLK B/U<AEZ1B>	7	8Z-PC6-203-010		TERMINAL,CHG B/U
1	88-PCD-124-010		HANGER,H/S BLUE B/U<AEZ1L>	8	8Z-PC6-002-010		CABI,BOTTOM BLK B/U
1	88-PCD-154-010		HANGER,H/S GRN B/U<AEZ1G>	9	88-PCD-202-010		FOOT,RUBBER
2	8Z-PC7-001-010		CABI,TOP BLK B/U<AEZ1B>	10	88-PCD-658-010		ANT,ROD B/U-YH871103
2	8Z-PC7-031-010		CABI,TOP BLUE B/U<AEZ1L>	11	SB-032-065-450		INTERNAL LOCK WASHER 3.2-6.5-0
2	8Z-PC7-041-010		CABI,TOP GRN B/U<AEZ1G>	A	87-751-096-410		VT2+3-10 GLD
3	88-PCD-205-010		TERMINAL,ANT B/U	B	87-751-073-410		TAPPING SCREW, VT2+2.6-6
4	8Z-PC6-004-010		LENS,LED BLK	C	87-751-034-410		SCREW VT2+2-5
5	8Z-PC7-003-010		BTN,PAGE BLK B/U	D	87-751-033-410		VT2+2-4 W/O SLOT
6	8Z-PC6-201-010		HLDR,BTN B/U				

COLOR NAME TABLE

Basic color symbol	Color	Basic color symbol	Color	Basic color symbol	Color
B	Black	C	Cream	D	Orange
G	Green	H	Gray	L	Blue
LT	Transparent Blue	N	Gold	P	Pink
R	Red	S	Silver	ST	Titan Silver
T	Brown	V	Violet	W	White
WT	Transparent White	Y	Yellow	YT	Transparent Yellow
LM	Metallic Blue	LL	Light Blue	GT	Transparent Green
LD	Dark Blue	DT	Transparent Orange		



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If can't understand for Description please kindly refer to "REFERENCE NAME LIST".

REF. NO	PART NO.	KANRI NO.	DESCRIPTION	REF. NO	PART NO.	KANRI NO.	DESCRIPTION
1	S8-PCD-120-010		DOOR,BATT<AEZ1B>	10	S8-PCD-140-030		BTN,TALK<5EZG>
1	S8-PCD-120-040		DOOR,BATT<AEZ1L>	11	S8-PCD-160-020		KEY,FUNCTION<AEZ1L>
1	S8-PCD-120-050		DOOR,BATT<AEZ1G>	11	S8-PCD-160-030		KEY,FUNCTION<AEZ1G>
2	S8-PCD-110-600		H/S BACK<AEZ1B>	11	S8-PCD-160-010		KEY,FUNCTION<AEZ1B>
2	S8-PCD-111-000		H/S BACK<AEZ1G>	12	S1-291-000-640		MIC CONDENSER CMT64
2	S8-PCD-110-900		H/S BACK(H/S-BL)<AEZ1L>	13	S0-251-100-000		MIC HOLDER (BLK)
3	S8-PCD-170-010		KNOB,CAP ANT	14	S8-PCD-100-500		HANDSET FRONT<AEZ1B>
4	S0-111-070-000		TELESCOPIC ROD ANTENNA	14	S8-PCD-101-000		H/S FRONT<AEZ1G>
5	S8-PCD-440-000		ANT,HOLDER H/S	14	S8-PCD-100-900		H/S FRONT(H/S-BL)<AEZ1L>
6	S3-120-000-010		BUZZER,LF12G-1WC 12MM	15	SB-022-048-300		INTERNAL LOCK WASHER 2.2-4.8-0
7	S8-PCD-210-000		RUBBER KEYPAD 107.5-44	A	S0-502-000-520		SCREW,ST2-5
8	S8-PCD-130-100		KEY,DIAL NO(H/S)	B	87-263-033-210		SCREW,2x4
9	S0-301-500-030		DYNAMIC RECEIVER 38-21	C	87-743-036-410		SCREW,ST2-8
10	S8-PCD-140-020		BTN,TALK<AEZ1L>				
10	S8-PCD-140-010		BTN,TALK<AEZ1B>				

COLOR NAME TABLE

Basic color symbol	Color	Basic color symbol	Color	Basic color symbol	Color
B	Black	C	Cream	D	Orange
G	Green	H	Gray	L	Blue
LT	Transparent Blue	N	Gold	P	Pink
R	Red	S	Silver	ST	Titan Silver
T	Brown	V	Violet	W	White
WT	Transparent White	Y	Yellow	YT	Transparent Yellow
LM	Metallic Blue	LL	Light Blue	GT	Transparent Green
LD	Dark Blue	DT	Transparent Orange		

ACCESSORIES/PACKAGE LIST

DESCRIPTIONで判断できない物は "REFERENCE NAME LIST" を参照してください。
If can't understand for Description please kindly refer to "REFERENCE NAME LIST".

REF. NO	PART NO.	KANRI NO.	DESCRIPTION
1	8Z-PC7-901-010	IB,AEZ (E) -C215	
2	8Z-PC7-902-010	IB,AEZ (S) -C215	
3	88-PCD-627-010	CORD, ST9-2WA	
4	87-B30-204-010	BAT,NB-302NC	
5	87-301-162-410	SW+3.8-32	
⚠	6 87-B30-278-010	AC ADAPTOR,AC-A907EZ1NC	

